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Geography

Zonia Baber

Since the climate in this latitude renders field-work impossible for the greater part of the school year, it is necessary to have excursions whenever the weather is favorable. Hence, during May and June the seemingly logical year's outline will not be followed by consecutive lessons, but will be interspersed by lessons upon regions visited.

For instance, after a trip to Highwood, where glacial, stream, and lake phenomena are strongly shown, a discussion of the work of those agents was necessitated. But whatever part of the earth's surface is considered, the work of the physiographic agents must be understood in order to appreciate its topography. A student can appreciate with far more definiteness of concept the work done by the great rivers in China or India, for example, after a close study of streams in this neighborhood.

Several all-day excursions are planned for this month. One is to be taken to Barrington, Illinois, to study the glacial terminal moraine; another to Starved Rock, near Utica, Illinois, where erosive phenomena, certain rock formations, and interesting plant life are well illustrated. (The Indian history connected with this region furnishes an added interest.)

Another excursion, to be made by boat down the Chicago River and drainage canal, will afford an opportunity to study certain industrial, commercial, and sanitary aspects of Chicago and vicinity, besides the physiographic phase of the region. Another excursion to Dune Park is desired to note changes since the visit last autumn. Whenever it is possible, two or more excursions to the same or similar regions are highly desirable, since the average student is prepared by the first trip for a much broader appreciation in the second.

In the study of India, outlined below, the student will find Dune Park repeated in the Indian or Thur Desert; Starved Rock, with its physiographic and historic setting, is almost identically repeated in Chitor and Gwalior, and in many other localities.

The canal trip, from the sanitary standpoint, cannot find its reflection in the Orient, but for commercial consideration the search is not difficult.

What seems then, in a certain plan of study, to be an interruption occasioned by out-of-door work, is truly a means of illuminating the subject under consideration.

If the field-work were feasible at all times it would be easy to plan a year's course of study upon field observations; but unforeseen weather conditions, together with the long winters, necessarily confines the field-work to a few months at the beginning and close of the school year.

Pedagogic School: INDIA.

I. Influence of India on present international problems.

II. Conditions which have contributed to the development of the Indian civilization.

1. Location in relation to other nations.
2. Size and shape.
3. Topography; its influence upon climate; products and people; Peninsular region or Dekkan; Indo-Gangetic alluvial plain; Himalaya and Suliman mountains. (See physical map.)

(a) Mountains. Influence of Himalaya Mountains, Aravalla Hills, Vindhya Range, Satpura Range, Western Ghats, Eastern Ghats.

(b) Rivers: Location and value of Indus, Ganges, Brahmaputra, Narbada, Godavari, Kistna, Cauvery. Which rivers have sacred influence? Which have delta plains? Which have valleys corresponding in shape to those of North Shore? Influence of Ganges delta plain on development of India? Commercial aspect of each of the above rivers. Use in irrigation.

4. Geology: Influence upon topography and products. Location and extent of alluvial, basaltic, and archæan formations. (See geology map.)

5. Rainfall and climate.

(a) Continental climate, December to May, during northeast monsoons. Effect of the Himalayas and Iran.

(b) Oceanic climate, June to November, during southwest monsoons. Effect of Indian Ocean.

(c) Account for cold weather, January and February; hot weather, March to May; rainy season, southwest monsoon, June to October; retreating southwest monsoon, or so-called northeast monsoons period, November to December.

(d) Effect of Himalayas, Western Ghats, Arakan Mountain ranges on rainfall.

(e) Locate areas of constant rainfall; areas of constant drought; areas of uncertain rainfall. Locate regions most liable to famine, and explain cause.

(f) Irrigation.

(1) Source of moisture: rain, rivers, underground reservoirs, lakes, and surface reservoirs.

(2) Locate regions where rain is sufficient for crops; "black cotton soil" regions, which act as sponge in retention of moisture; regions where wells are employed, where surface reservoirs are used. (See geological map.) Why are tanks and lakes generally in the archæan? Wells in the alluvial tracts? Why neither is necessitated in the trap area?

6. Crops.

(a) Food crops: wheat, rice, millet, barley, sugar, spices, etc.

(b) Oil seeds: linseed, rape, and mustard, castor, sesamum, ground nut, etc.

(c) Fibers: cotton, jute, hemp, rhea, silk, wool, etc.

(d) Dyeing and tanning materials; indigo, safflower, etc.

(e) Drugs and narcotics: opium, tea, coffee, tobacco, cinchona, Indian hemp, vines, and other sources of alcohol, etc.

(f) Miscellaneous products: cutch, lac, wild silk worms, india rubber, palm sugar, cocoanut, musk, myrobalan, etc.

7. Forests. Why has India a comparatively small area of forests? Locate regions where deodar, sal, teak, sandal, caoutchouc, prevail. (See forest map. *Statistical Atlas of India*, 1895.)

8. Animals—domestic and wild. Predominance of buffaloes and cattle in domestic use. Influence of religious beliefs in preserving wild animals.

9. Economic minerals. Locate regions which produce coal, iron, oil, and tin.

10. People. Race, appearance, dress.

(a) Cities. Account for few large cities in India. Contrast urban population of India 5 per cent with the urban population of England 53 per cent; meaning of each.

(b) Languages. Account for the existence of eighty languages in India. Where are the Dravidian languages principally found? The Aryan languages?

(c) Religions: Hinduism, Buddhism, Janism, Sikhism, Mohammedism, Animism, Christianity. (See map of prevailing religions. *Statistical Atlas of India*, 1895.) Effect of religions on industries, society, architecture, and art.

11. Political divisions. Bengal, Rajputana, Northwest Provinces, Panjab, Sind, Bombay Presidency, Madras, Haidrabad, Mysore, Tranvancore and Cochin, Kashmir, Assam, Burma, Nikobar Issakadiv and Maldiv Islands.

(a) Relation of native state to British government.

(b) Government of British India.

(c) Non-British states in India. Locate Portuguese India, French Possessions, Nipal and Bhutan. Why not under British rule?

12. History. Brief story of India. Compare with the history of China. Influence of religion on the lack of historic interest of the Aryan Indians. Has British rule been beneficial or detrimental to India? Why? What is your solution of the famine trouble?

Expression: Model, draw, and paint certain parts of regions visited. Model, draw in color relief map of India in dry and wet seasons. Draw a typical Asiatic Indian.

Materials: The subject will be illustrated by photographs, stereopticon views, products of India, manufactured and natural, books, and work of Indian school-children.

References: *Statistical Atlas of India*, 1895;

Mill, *International Geography; Stanford Compendium*, Vol. II; Reclus, *Earth and its Inhabitants*, Vol. III; Hunter, *The Indian Empire* and *Brief History of Indian People;* Murray, *Hand-book oj India, Burma and Ceylon;* Alfred Lyall, *The Rise and Expansion of the British Dominion in India;* Fergusson, *History of Indian and Eastern Architecture.*

Mathematics

George W. Myers

Pedagogic School

The pendulum of method in arithmetical teaching has swung from the extremely concrete to the extremely abstract within the last few years. The vibrations are moreover continuing at present, but with ever-decreasing amplitude. It is to be hoped that the damping effect of mutual criticism will in the near future enable us to fix our attention upon the position of stable equilibrium.

When this golden mean has been found we shall have learned how to secure to the pupil, in an economical way, the necessary knowledge of the laws and uses of abstract number without either hide-binding his thinking with a surfeit of abstractions, assimilable only by a mature mind, or lumbering his mental movements with a useless burden of devices for "concreting number" long after their period of serviceableness has passed. We shall then be able to admit that number is a purely "mental product, put into things and not got from them," and still to see that to use things and not to be used by them number *must* be put into them, and that for the bulk of our pupils a knowledge of number and its uses is of value in direct proportion to their skill in "putting it into things."

The school can render no more valuable service to society in general to-day than to discover a way in which the boys and girls who attend may be trained into a facile working knowledge of elementary mathematics. If this way could be found, mental discipline, the inducing of judgments of magnitude, culture, important as they all are in themselves, would come as by-products in the evolution of the child into the efficient man, who would be ready, because able, to perform the service our particular time demands. Such practical mathematics is needed in our business houses, with our railroads, and in our workshops, factories, scientific laboratories, on our farms, and wherever the great work of production is in progress—most of all, in the schoolroom.

The objection quite generally made to such mathematical work in the grades as elementary surveying, questions connected with simple systems of forces, is that it is not the purpose of the public school to teach professional knowledge. This objection can hardly prevail against the argument that useful knowledge will furnish as sound a basis for culture as will useless. Such work does not seek to train the pupil for a profession, but merely to give him an insight into the reality of the need for arithmetic, algebra, and geometry in modern life; to give a view of a fuller and more vital phase of need than is furnished by the keeping of accounts and the demands of general training.

The most formidable obstacle in the way of introducing such practical work is the inability of teachers to carry it out. Most grade teachers, being women, have not been under conditions which make the stress of the mathematical needs of the industrial professions keenly felt, and are likely to infer that there is no such need